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AMPHIBIAN VEHICLE

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This invention or discovery relates to amphibian vehicles; and it comprises a power-driven vehicle adapted for travel in marshes as well as on open water and solid ground, and comprising a frame, buoyant pneumatic tired traction wheels at least ten feet in diameter, means for mounting the wheels in close-coupled relation fore and aft on the frame, said means being so constructed and arranged that the axis joining the centers of the front wheels can twist in a vertical plane with respect to the axis joining the centers of the rear pair of wheels, power means for driving all four wheels and means for steering at least one pair of wheels, the wheels having such buoyancy as to float the vehicle in water with the wheels immersed approximately one-fourth of their diameter, the center of gravity of the vehicle being substantially at the center of the frame and at the level of the wheel centers, and the wheel base being not much greater than the diameter of the wheels, all as more fully hereinafter set forth and as claimed.

In certain undertakings, such as geophysical prospecting, there is a desideratum for a vehicle capable of traveling, while carrying a useful load, over very soft and treacherous ground, including swamps and marshes, which usually have stretches of open water of various depth. In the delta of the Mississippi, where salt domes occur, sometimes associated with oil, there are many thousands of square miles of this kind of territory, overgrown with heavy vegetation, which are substantially inaccessible; which cannot be entered either on foot or by boat. Land vehicles are useless. The soft mud is practically bottomless; it offers no footing on which even a caterpillar tractor can travel. Much of this territory is unexplored; probably has never even been entered.

According to the present invention we provide a power driven vehicle capable of carrying a prospecting crew and instruments and of such a character that it will travel with preservation of good clearance and a high working level irrespective of whether the passage of the vehicle happens momentarily to be over mud, water or land. To this end we provide a vehicle with four or more resilient flotation wheels of sufficiently large diameter to make ascent of banks easy. Wheels on opposite sides are arranged for independent driving, to facilitate turning in water and maneuvering. Ordinarily, the wheels are at least 10 feet in diameter and are rubber-tired. The superstructure is of light construction to preserve the center of gravity near the hubs. The vehicle is massive enough to crush down all ordinary vegetation, cane, grass, brush, etc. The wheels have a buoyant central portion and a buoyant pneumatic tire. All four wheels are driven. The wheels, which are in effect rotary hulls, are mounted about at the corners of a square, and as close together fore and aft as is conveniently practicable; for reasons set forth subsequently. The front wheels are mounted on a pivoted axle. The wheels have sufficient buoyancy so as to support the vehicle while immersed to about one-fourth their diameter in water. That is, when the vehicle is in open water, the vehicle sinks half way to the hubs. On a more solid footing the working level is higher but there is only slight sinking of the vehicle as a whole in passing from solid land to water. In either case there is enough clearance to prevent difficulty with rank vegetation growing at the water's edge, or with logs and stumps. The center of gravity of the vehicle is made substantially at the center of the square, or a little ahead of the center, and at the level of the wheel centers, it having been discovered that this is necessary in securing a seaworthy vehicle capable of navigating water and marshes with safety; and in particular capable of going from water to land and vice versa which is a surprisingly difficult maneuver, on account of a tendency for the end of the vehicle which is immersed in water to sink, as the end which is climbing out on land rises, and also because of the common occurrence in marshes of dense, high vegetation growing right to the water's edge. Accordingly we provide high body clearance to overcome the resistance of such vegetation.

The vehicle constructed according to these principles is, as a matter of fact, admirably adapted for traversing treacherous ground of all sorts, as well as land and water and is in particular suited for swamps having slimy mud, rank vegetation, fallen logs and the like which would be insuperable obstacles to any known type of vehicle. Where there is practically no footing, as in "floating prairie", only the present large buoyant-wheeled vehicle affords the right combination of traction, flotation, body clearance and low unit supporting pressure, to come out of deep water or soft bottomless mud into the tall grass.

In the accompanying drawings there is shown, more or less diagrammatically, an example of a specific embodiment of a vehicle within the purview of the invention. In the showings,

Fig. 1 is a view partly in elevation and partly in vertical section of the vehicle, the view being taken along line 1—1 of Fig. 2;